TECHNICAL REVIEW DOCUMENT
for
MODIFICATION TO OPERATING PERMIT 96OPAD120

Suncor Energy (U.S.A), Inc. – Commerce City Refinery, Plants 1 and 3 (West)
Source ID 0010003

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Revised March thru May 2013

I. Purpose:

This document establishes the decisions made regarding the requested modification to the Operating Permit for Suncor Energy's – Commerce City Refinery Plants 1 and 3. This document provides information describing the type of modification and the changes made to the permit as requested by the source and the changes made due to the Division's analysis. This document is designed for reference during review of the proposed permit by EPA and for future reference by the Division to aid in any additional permit modifications at this facility. The conclusions made in this report are based on the information provided in the requests for modifications submitted to the Division on December 28, 2012 and March 19, 2013, additional information submitted on January 30, April 5 & 11 and May 1 & 28, 2013, e-mail correspondence and telephone conversations with the source. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Permit Modification Request/Modification Type

The Operating Permit for the Suncor Plants 1 and 3 was issued on August 1, 2004 and was renewed on October 1, 2012. The expiration date for the permit is October 1, 2017. Each of the modification requests will be addressed separately to identify the modification type and any associated modeling required for that modification.

December 28, 2012 Modification (Tanks T96/T97)

The purpose of this modification is to revise the reid vapor pressure (RVP) of the

gasoline stored in these tanks. The Title V renewal permit indicates that these tanks can store gasoline and/or products with an RVP of 13 psia or lower. In their modification application, Suncor has requested that the permit be revised to allow gasoline and/or products with an RVP of 15 psia or lower to be stored in these tanks. In conjunction with the request to store higher RVP materials, the source requested that the VOC emissions limitation for these tanks be increased from 5.90 tons/yr to 6.72 tons/yr (an increase of 0.82 tons/yr).

Modification Type

The source indicated that this modification would qualify as a minor modification. Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications "are not otherwise required by the Division to be processed as a significant modification" (Colorado Regulation No. 3, Part C, Section X.A.6). The Division requires that "any change that causes a significant increase in emissions" be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.A.7.a). According to Part G of Regulation No. 3 (Section I.L, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that a significant increase in emissions is the potential to emit above the major stationary source significant level in Colorado Regulation No. 3, Part D, Section II.A.42, which is 40 tons/yr for VOC. Since the requested increase in permitted VOC emissions is below the significant levels the Division agrees that this modification can be processed as a minor modification.

Modeling Requirements

This project results in an increase in permitted VOC emissions of 0.82 tons/yr. Although VOC is a precursor for ozone, in general accurate and cost effective methods for modeling ozone impacts from stationary sources are not available. Therefore, individual source ozone modeling is not routinely requested for permit modifications.

December 28, 2012 Modification (Centrifuge System Thermal Oxidizer)

The purpose of this modification is to replace the engines that are currently controlling emissions from the Plant 1 wastewater treatment system (WWTS) centrifuge with a thermal oxidizer (TO). A construction permit (12AD1830) was issued to PSC Industrial Outsourcing, LP for the TO that will be installed on the centrifuge on August 21, 2012. Since the TO is intended for use on the centrifuge and will be operated by Suncor, the Division requested that Suncor include the centrifuge TO in their Title V permit.

As part of the renewal permit processing (issued October 1, 2012), the Division permitted the Plant 1 WWTS to reflect modifications made to the system between 2007 and 2011. Control devices were planned for many of the emission units within the Plant 1 WWTS, most of which would be carbon canisters, although in initial discussions Suncor had not decided on a final control device for the centrifuge. With the exception

of one tank, which had an existing construction permit, emissions from the WWTS were estimated using EPA's WATER 9 model and the Plant 1 WWTS was permitted as a system, not as individual pieces of equipment. Estimated uncontrolled emissions for the Plant 1 WWTS exceeded the major stationary source significant level for VOC (40 tons/yr); however, taking the controls into consideration, the system was permitted at 8.8 tons/yr. Processing of the renewal permit included a public comment period. The changes to the Plant 1 WWTS were included in the draft permit that went to public comment and the technical review document noted that controlled emissions were below the VOC significant level. The APEN submitted for the Plant 1 WWTS, which was included in the public comment package, indicated that uncontrolled emissions were above the significant level. During the public comment period for the renewal permit, Suncor was undecided as to what control device would be used for the centrifuge, so the permit did not specify a particular control technology but noted that the control device would be required to meet the control requirements in 40 CFR Part 61 Subpart FF, National Emission Standards for Benzene Waste Operations (hereafter referred to as "BWON"). Prior to issuance of the renewal permit, Suncor had indicated that emissions from the centrifuge would be controlled by two engines and so the permit was revised to reflect that.

The application submitted by PSC for the TO indicated that uncontrolled emissions from the centrifuge would be less than the major stationary source significant level for VOC (40 tons/yr). As a result, the PSC construction permit did not go through public comment but the construction permit (12AD1830) set a VOC emission limitation on uncontrolled VOC emissions. A performance test conducted in October 2012 indicated that uncontrolled VOC emissions from the centrifuge were above the VOC significant level. The test indicated that uncontrolled emissions were estimated at 93 lbs/hr (327 tons/yr based on 7000 hrs/yr of operation), while the permit limited uncontrolled VOC emissions to 27.8 tons/yr (equivalent to ~ 8 lbs/hr). A performance test was conducted in 2011 on the engines controlling emissions from the centrifuge and uncontrolled VOC emissions during this test were estimated at 34 lbs/hr (119 tons/yr based on 7000 hrs/yr of operation). The WATER 9 analysis estimated uncontrolled emissions from the centrifuge at 3.9 lbs/hr. Based on the performance test data on the centrifuge, it appears that the WATER 9 model underestimates emissions from the centrifuge. Therefore, as part of this application, the Division asked that Suncor permit the centrifuge separately from the rest of the Plant 1 WWTS and estimate emissions based on the performance test data.

Modification Type

The Division requested this application from Suncor and the Division informed Suncor that this modification could be processed as a minor modification. Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications "are not otherwise required by the Division to be processed as a significant modification" (Colorado Regulation No. 3, Part C, Section X.A.6). The Division requires that "any change that causes a significant increase in emissions" be processed as a significant

modification (Colorado Regulation No. 3, Part C, Section I.A.7.a). According to Part G of Regulation No. 3 (Section I.L, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that a significant increase in emissions is the potential to emit above the major stationary source significant level in Colorado Regulation No. 3, Part D, Section II.A.42, which is 40 tons/yr for VOC. Potential to emit is based on maximum design rate, 8760 hours per year of operation and does not rely on controls, unless the emission unit is subject to a federally enforceable requirement to control emissions. Although uncontrolled emissions from the centrifuge are above the significant level, the current Title V permit requires that VOC emissions from the centrifuge be controlled. The purpose of this modification is to replace the control device on the centrifuge system. Because the Title V permit is federally enforceable and requires that emissions from the centrifuge be controlled, this project qualifies as a minor modification as long as controlled emissions are below the significant level. As indicated in the table below, controlled emissions from this project are below the significant level.

	Emissions (tons/yr)[1]				
	$PM/PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Requested Emissions	0.16	1.3	3.3	4.1	9.0
PSD/NANSR Significance Level (T5 Minor Mod Level)	25/15/10	40	40	100	40

[1]Only VOC emissions are controlled.

Greenhouse gas emissions from this project were estimated at 2,978 tons/yr of CO_2e, which is below the 75,000 tons/yr level which would trigger PSD review for greenhouse gases.

Note that as part of this project Suncor requested that he VOC emission limit for the Plant 1 WWTS be reduced. Since the VOC limit in the current permit for the Plant 1 WWTS includes the centrifuge and the centrifuge will be permitted separately a reduction in permitted emissions from the Plant 1 WWTS is appropriate.

Colorado Regulation No. 3, part C, Section X.A.4 specifies that those changes that "do not seek to establish or change a permit term or condition for which there is no corresponding applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject" can be processed as a minor modification. Since uncontrolled emissions from the centrifuge are above the VOC significant level, by controlling these emissions the source avoids major stationary source non-attainment area new source review (NANSR) requirements (i.e., the centrifuge will be permitted as a synthetic minor source). However, as discussed previously, during the renewal of the Title V permit the entire Plant 1 WWTS was permitted with controls in order to avoid major stationary source NANSR requirements (i.e., the Plant 1 WWTS was permitted as a synthetic minor source). The Title V renewal permit went through public comment and as discussed previously the specific control device for the centrifuge was not identified. The purpose of this

modification is primarily to permit the centrifuge separately from the rest of the WWTS, since the Division considers that WATER 9 may be underestimating emissions from the centrifuge and to change the control device for the centrifuge. In general, the Division has not required that synthetic minor permits, be sent for public notice multiple times. Since the changes being made to permit the centrifuge are not significant the Division considers that this application can be processed as a minor modification.

Modeling Requirements

Requested VOC emissions from this project are 9 tons/yr. Although VOC is a precursor for ozone, in general accurate and cost effective methods for modeling ozone impacts from stationary sources are not available. Therefore, individual source ozone modeling is not routinely requested for permit modifications.

The TO is also a source of other criteria pollutant emissions and except for short-term NO_X, those emissions are below modeling thresholds specified in the Division's Colorado Modeling Guideline's May 20, 2011 Updated Tables as indicated in the table below. Therefore, modeling is not warranted for this modification.

In accordance with PS Memo 10-01 (see pages 26 -27) the Division's Stationary Sources Program has indicated that for minor sources with requested NO_X and SO_2 emissions less than 40 tons/yr that a compliance demonstration for the short-term (hourly) NO_2 and SO_2 national ambient air quality standards (NAAQS) is not required. Therefore, a modeling analysis was not conducted to assess compliance with the short-term NO_2 NAAQS.

Pollutant	Modeling Threshold[1]		Project Emissions	
	Annual	Short-Term	Annual	Short-Term
CO	100 tons/yr	23 lbs/hr	4.1 tons/yr	0.93 lbs/hr
NO_X	40 tons/yr	0.46 lbs/hr	3.3 tons/yr	0.75 lbs/hr
SO_2	40 tons/yr	0.46 lbs/hr	1.3 tons/yr	0.30 lbs/hr
PM_{10}	15 tons/yr	82 lbs/day	0.16 tons/yr	0.89 lbs/day
$PM_{2.5}$	5 tons/yr	11 lbs/day	0.16 tons/yr	0.89 lbs/day

[1] The thresholds in the Modeling Guideline are not "bright-lines", i.e., modeling may be warranted for projects with emissions below the thresholds. However, for this project given the level of emissions this situation does not warrant modeling.

Discussion

The centrifuge system is essentially a three phase separator, generating oil, water and solid streams. Materials from various tanks are either pumped or vacuum trucked to the centrifuge mix/frac tank which is then pumped to the centrifuge. Solids are collected in a roll-off bin, which when full is capped and sent off-site.

In their application the source indicated that the TO will be operated while the centrifuge system (centrifuge and centrifuge mix tank/frac tank) is in operation. When the

centrifuge system is not in operation, any potential vapors from the centrifuge system will be routed through two carbon canisters operated in series. The application also indicates that the engines that are currently controlling emissions from the centrifuge system will be shutdown upon successful startup of the TO. Suncor defines successful operation of the TO, as operation of the TO for 30 days combusting centrifuge system emissions. Suncor indicated that successful startup of the TO has occurred and that the engines have been removed from the facility. Therefore, the permit will not address the transition from the engines to the TO.

In their application, VOC emissions from the centrifuge were estimated using uncontrolled emissions measured during the October 2012 performance test and then relied on a control efficiency of 99.9%. Although the test results indicated that the control efficiency of the unit exceeded 99.9%, the Division indicated that the emission limitation would be based on a TO control efficiency of 99%. Suncor submitted additional information on January 30, 2013 requesting VOC emissions assuming a control efficiency of 99% for the TO. In the January 30, 2013 submittal Suncor estimated NO_X and CO emissions using different emission factors.

The emission factors used to estimate emissions from the other pollutants are as follows:

Pollutant	Emission Factor	Emission Factor Source
PM/ PM_{10}/ $PM_{2.5}$	7.45 x 10^{-3} lb/MMBtu	AP-42, Section 1.4 (dated 7/98), Table 1.4-2, converted to lb/MMBtu based on a heat input of 1020 Btu/scf per footnote a.
VOC – with TO	2.06 lb/hr	See discussion below regarding how the lb/hr emission factors were determined.
VOC – with	0.17 lb/hr	
SO_2	0.30 lb/hr	
NO_X	0.75 lbs/hr	
CO	0.185 lb/MMBtu*	AP-42, Section 13.5 (dated 9/91), Table 13.5-1. Since the October 2012 performance test predicted much lower emissions, the emission factor used is half of the AP-42 factor.

*In order to be consistent with the other pollutants, a CO emission factor of 0.93 lbs/hr will be included in the permit. The 0.93 lbs/hr is based on the AP-42 emission factor multiplied by the design heat rate of the TO (5 MMBtu/hr).

VOC emissions from the TO were estimated assuming an uncontrolled VOC concentration of 100,000 ppm in the inlet gas, an inlet flowrate of 300 scf/min (VOC was assumed to be propane) and a control efficiency of 99%. The 100,000 ppm VOC concentration was a short-term reading recorded during the October 2012 performance test. The average inlet VOC concentration during each hour long test run was actually much lower than this (64,022 ppm for run 1, the 3 run average was 51,077 ppm). VOC emissions from the carbon canisters were estimated assuming an uncontrolled VOC concentration of 100,000 ppm in the inlet gas, an inlet flowrate of 5 scf/min (VOC was assumed to be propane) and a control efficiency of 95%. Permitted emissions are based on centrifuge emissions routed to the TO. Because of the low flow rate

associated with the carbon canisters, VOC emissions from the centrifuge system when controlled by the carbon canisters are estimated to be much lower.

SO_2 emissions were estimated based on an assumed H_2S concentration of 100 ppm in the inlet gas and an inlet flowrate of 300 scf/min.

NO_X emissions were estimated based on a NO_X concentration of 70 ppm and an exhaust flowrate of 1,500 scf/min (NO_X assumed to be NO_2, MW = 46). The 70 ppm NO_X concentration was a short-term reading recorded during the October 2012 performance test. The average NO_X concentration during each hour long test was actually lower than this (51.2 ppm for run 1, the 3 run average was 29.23 ppm)

Note that since requested emissions for PM, PM_{10} and $PM_{2.5}$ were below the APEN de minimis level, emission limitations for these pollutants were not included in the permit.

Update of Potential Aggregation Issues

As discussed in the technical review document (TRD) prepared to support the October 1, 2012 renewal permit for Plants 1 and 3 revisions were made to the Plant 1 WWTS and those changes were incorporated into the renewal permit. During processing of the renewal permit, modifications were made to other portions of the facility and any potential aggregations issues were discussed in the October 1, 2012 renewal TRD. Since changes to permitted emissions from the Plant 1 WWTS are being made with this modification, the Division is reviewing the potential aggregation issues addressed in the October 2012 renewal TRD to ensure that prevention of significant deterioration (PSD) and/or non-attainment area new source review (NANSR) are not triggered. Potential aggregation issues with respect to the Plant 1 WWTS were discussed on pages 56 – 60 of the October 2012 renewal TRD.

The October 2012 renewal TRD noted that the modifications were made to the Plant 1 WWTS between 2007 – 2011 and the change to control the centrifuge with the TO can reasonably be considered with the other Plant 1 WWTS changes as part of the project. The October 2012 renewal TRD also noted that no changes had been made to the Plant 2 WWTS and that changes made to the Plant 3 WWTS in 1991 had been made so long ago that they would not reasonably be considered part of the project. Since the October 2012 renewal TRD, Suncor submitted a request in March 2012 to return Tank T-29 to service. Tank T-29 is part of the Plant 2 WWTS to service. While it's not clear that returning Tank T-29 to service would necessarily be considered part of the project for the Plant 1 WWTS and should be aggregated to determine PSD/NANSR applicability, but if they were considered together, emissions would be as follows:

	Emissions (tons/yr)[1]					
	PM	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Centrifuge Generator Engine	0.20	0.20	5.6×10^{-3}	4.06	3.55	1.32
Tank T4501						2.75
Plant 1 WWTS*						7.93
Centrifuge **	0.16	0.16	1.3	3.3	4.1	9.0
Tank T-29 (Plant 2 WWTS)						1.71
Total	0.36	0.36	1.306	7.36	7.65	22.71
PSD/NANSR Significance Level (T5 Minor Mod Level)	25	15/10	40	40	100	40

*current permitted emissions minus the centrifuge.
*based on requested emissions for this permitting action.

The October 2012 renewal TRD also looked at whether or not the Plant 1 WWTS and other projects should be aggregated in order to assess whether PSD/NANSR was triggered. The October 2012 renewal TRD did not definitively conclude that the Plant 1 WWTS should be aggregated with other projects but provided a summary of emissions if the Plant 1 WWTS was aggregated with the GBR unit and if the Plant 1 WWTS was aggregated with the Plant 2 boilers. Suncor submitted information on March 19, 2013 indicating that none of the projects addressed during processing of the October 2012 renewal permit warranted aggregation since they were independent (each of the projects could operate individually from each other and each project could be completed without affecting or being affected by other projects) and that none of the projects would suffer a reduced benefit if another project was not completed.

In the TRD for the October 2012 renewal permit, the Division presumed that the Plant 1 WWTS modifications were intended solely to meet applicable requirements (e.g. the requirements in 40 CFR Part 61 Subpart FFF), rather than to increase capacity. The Division considered the potential aggregation of the Plant 1 WWTS and the GBR Unit and the Plant 1 WWTS and the Plant 2 Boilers as it seemed possible that with a new process unit (GBR unit) and slighter larger boilers that an increase in the WWTS capacity may be necessary. However, Suncor indicated in an email submitted on April 5, 2013 that the Plant 1 WWTS upgrades did not increase the capacity of the system. Therefore, the Division considers that aggregating the Plant 1 WWTS upgrades with either the GBR unit or the Plant 2 boiler replacement project is not warranted and the analysis conducted in the October 2012 renewal TRD has not been updated.

March 19, 2013 Modification (Regenerative Thermal Oxidizer for Plant 1 Wastewater Treatment System)

The purpose of this modification is to construct and operate a regenerative thermal oxidizer (RTO) to control emissions from the Plant 1 WWTS. As required by Section II, Condition 23.11 of the Title V permit, Suncor was required to replace covers and gaskets on the API headworks and monitor monthly for “no detectable emissions” by June 30, 2012. If the monthly monitoring indicates detectable emissions for three months in any six month period, Suncor is required to install a control device on the API headworks. The results of the monitoring indicate that Suncor must install a control

device and thus the request to construct and operate an RTO. Initially the RTO will control emissions from the API headworks but there are plans to route other waste streams (including the centrifuge system) currently controlled by other control devices to the RTO, therefore, the modification request addresses this future scenario.

In a May 28, 2013 e-mail, Suncor submitted information indicating that the NOX emission factor for the RTO included in the March 19, 2013 application was incorrect and asked that the NO_X emission factor and subsequent emission NO_X emission limit be corrected. The below discussion reflects the corrections noted in the May 28, 2013 e-mail.

Modification Type

As indicated in the discussion under the December 28, 2012 modification for the centrifuge TO, the Plant 1 WWTS was addressed in the October 1, 2012 renewal permit and permitted emission limits were included. Uncontrolled emissions of the Plant 1 WWTS were above the significance level but by taking credit for controls permitted VOC emissions are below the significant level of 40 tons/yr. The purpose of this modification is primarily to install different controls, therefore, as long as requested emissions are below the significant levels than this project can be processed as a minor modification.

Emissions from this project are indicated in the table below:

	Emissions (tons/yr)[1]				
	$PM/PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Requested Emissions	0.13	6.6	1.8	6.5	17.5
PSD/NANSR Significance Level (T5 Minor Mod Level)	25/15/10	40	40	100	40

[1]Only VOC emissions are controlled.

Greenhouse gas emissions from this project were estimated at 2,383 tons/yr of CO_2e, which is below the 75,000 tons/yr level which would trigger PSD review for greenhouse gases.

Prior to this modification and the modification for the centrifuge system TO (submitted on December 28, 2012), all equipment from the Plant 1 WWTS, except for tank T-4501 was permitted with a single VOC emission limitation. As part of this modification, emissions from the Plant 1 WWTS will be permitted differently.

VOC emissions from the portions of the Plant 1 WWTS that are not expected to be controlled by the RTO in the future will be permitted at 1.64 tons/yr and are categorized as “uncontrolled sources and sumps”. Emissions from the equipment categorized as “uncontrolled sources and sumps” were estimated using WATER 9 and/or AP-42 emissions factors.

The API headworks and other sources that may be controlled by the RTO in the future are permitted together and categorized as “controlled sources”. Requested VOC emissions from the RTO are based on all anticipated streams routed to the RTO (including those currently controlled by carbon canisters), not just the API headworks and also include emissions from the sources that are currently controlled by carbon canisters. As a result several emission sources are double-counted in the requested VOC emission limitation.

Emissions from the centrifuge are permitted separately per the December 28, 2012 modification but are also addressed under the RTO (permitted under the category “controlled sources”) as it is anticipated that emissions from the centrifuge system will be routed to the RTO in the future. Therefore, emissions from the centrifuge are double-counted in this analysis. Overall emissions from the Plant 1 WWTS based on this request and the change in permitted/requested emissions for the Plant 1 WWTS are as follows:

	Emissions (tons/yr)				
	$PM/PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Requested Emissions[1]					
T4501					2.75
Controlled Sources[1]	0.13	6.6	1.8	6.5	17.5
Centrifuge System/TO[2]	0.16	1.3	3.3	4.1	9.0
Uncontrolled Sources & Sumps					1.64
Total	0.29	7.9	5.1	10.6	30.89
Current Permitted Emissions					
T4501					2.75
All others					8.8
Total					11.55
Change in Emissions	0.29	7.9	5.1	10.6	19.34

[1]Controlled sources include the API headworks which will initially be controlled by the RTO and other sources that may be controlled by the RTO in the future but are currently controlled with other control devices.

[2] Centrifuge emissions are included with the controlled sources and are thus double counted in this analysis.

Note that in the above analysis, emissions from the centrifuge are double counted under both the “centrifuge system” and “controlled sources”, so the emission estimates shown in the above table are artificially high.

Modeling Requirements

This project results in an increase in permitted VOC emissions of 19.34 tons/yr. Although VOC is a precursor for ozone, in general accurate and cost effective methods for modeling ozone impacts from stationary sources are not available. Therefore, individual source ozone modeling is not routinely requested for permit modifications.

The RTO is also a source of other criteria pollutant emissions and except for short-term SO_2 those emissions are below modeling thresholds specified in the Division's Colorado Modeling Guideline's May 20, 2011 Updated Tables as indicated in the table below. Therefore, modeling is not warranted for this modification.

In accordance with PS Memo 10-01 (see pages 26-27) the Division's Stationary Sources Program has indicated that for minor sources with requested NO_X and SO_2 emissions less than 40 tons/yr that a compliance demonstration for the short-term (hourly) NO_2 and SO_2 national ambient air quality standards (NAAQS) is not required. Therefore, a modeling analysis was not conducted to assess compliance with the short-term SO_2 NAAQS.

Pollutant	Modeling Threshold[1]		Project Emissions	
	Annual	Short-Term	Annual	Short-Term
CO	100 tons/yr	23 lbs/hr	6.5 tons/yr	1.48 lbs/hr
NO_X	40 tons/yr	0.46 lbs/hr	1.8 tons/yr	0.4 lbs/hr
SO_2	40 tons/yr	0.46 lbs/hr	6.6 tons/yr	1.49 lbs/hr
PM_{10}	15 tons/yr	82 lbs/day	0.13 tons/yr	0.72 lbs/day
$PM_{2.5}$	5 tons/yr	11 lbs/day	0.13 tons/yr	0.72 lbs/day

[1] The thresholds in the Modeling Guideline are not "bright-lines", i.e., modeling may be warranted for projects with emissions below the thresholds. However, for this project given the level of emissions this situation does not warrant modeling.

Discussion

As discussed previously, the primary purpose for installing the RTO is to control emissions from the API headworks. Suncor has further plans to tie in emissions from the following source to the RTO in the future: API separators (T4514, T4515), DGF system (T4502, T4503, T4504, T4507, T4508), slop oil system (T4516, T4517, T4518), API lift station, the T60 lift station and the centrifuge system. When the RTO is down, emissions from this various equipment will be routed to two carbon canisters in series (except for the centrifuge system, this is the way emissions from this equipment is currently controlled). Requested emissions include emissions from all source's that will eventually be tied into the RTO. Requested VOC emissions are based on an RTO control efficiency of 99%.

Note that the permit will require performance tests to verify VOC emissions and the VOC destruction efficiency each time new units are routed to the RTO.

The RTO is an Anguil, Model 150 RTO, rated at 4.0 MMBtu/hr. The following emission factors were used to estimate emissions for all but VOC:

Pollutant	Emission Factor		Emission Factor Source
	lb/MMBtu	lb/hr[1]	
PM/ PM_{10}/ $PM_{2.5}$	7.45×10^{-3}	2.98×10^{-2}	AP-42, Section 1.4 (dated 7/98), Table 1.4-2, converted to lb/MMBtu based on a heat input of 1020 Btu/scf per footnote a.
SO_2		1.49	Based on an inlet flowrate of 15,000 scf/min and an H_2S concentration of 10 ppm in the inlet gas. The flow rate is based on RTO design rate and the H_2S concentration is based on engineering estimates.
NO_X	0.1	0.4	Manufacturer's Guarantee
CO	0.37	1.48	AP-42, Section 13.5 (dated 9/91), Table 13.5-1.

[1]lb/MMBtu emission factors converted to lb/hr based on the design heat rate of 4 MMBtu/hr.

Annual emissions of NO_X, PM/PM_{10}/$PM_{2.5}$ and CO are based on the design heat rate of the unit (4.0 MMBtu/hr) and 8760 hrs per year of operation. Note that the Division will include the emission factors in units of lbs/hr in the permit. Since requested emissions of PM/PM_{10}/$PM_{2.5}$ are less than the APEN de minimis level a permit limit will not be included in the permit for those pollutants. Although NO_X emissions are below the APEN de minimis level, given the low emission factor, the Division is including NO_X emissions in the permit and will require a performance test for NO_X.

VOC emissions were estimated as follows:

VOC Source	Emission Factor[1]	Emission Factor Source
RTO – all sources	2.57 lbs/hr	Based on an inlet flowrate of 15,000 scf/min and a VOC concentration of 2750 ppm in the inlet gas. The flow rate is based on RTO design rate and the VOC concentration is based on engineering estimate.
Centrifuge – carbon canisters	0.16 lbs/hr	Based on an inlet flowrate of 5 scf/min and a VOC concentration of 100,000 ppm in the inlet gas. The flow rate is based on engineering estimate and the VOC concentration is based on based on a high short-term ppm value recorded during the October 2012 performance test.
API Headworks – carbon canisters	2.34 lbs/hr	Based on an inlet flowrate of 50 scf/min and a VOC concentration of 150,000 ppm in the inlet gas. The flow rate and VOC concentration are based on engineering estimates.
All Others – carbon canisters	1.42 lbs/hr	Based on controlled emissions from the WATER 9 emission summary submitted on February 27, 2012.

[1]Emission factor includes control efficiency of 99% for RTO and 95% for carbon canisters. For calculations VOC MW is assumed to be 40.

The inlet VOC concentration that is used to derive the VOC emission factor for all RTO sources presumes that all source that are anticipated to be routed to the RTO are in fact routed to the RTO. The requested VOC emission limit is based on the following: RTO operating 7,760 hrs/yr, carbon canisters for the centrifuge and API headworks operating 1,000 hrs/yr and carbon canisters for all others operating for 8,760 hrs/yr. The resulting VOC emission limit double-counts emissions from the sources currently controlled by carbon canisters.

Update of Potential Aggregation Issues

The update of any potential aggregation issues is discussed in more detail under this header for the December 28, 2012 Centrifuge System TO modification. As noted in that section, the Division considered that the modification to tank T-29 at Plant 2 might be reasonable to consider for aggregation. Therefore, the table shown under the same header for the December 28, 2012 Centrifuge System TO mod has been updated to address the RTO. Note that since emissions from RTO ("controlled sources") include emissions from the centrifuge system/TO, emissions from the centrifuge system/TO are double counted in this analysis.

	Emissions (tons/yr)[1]					
	PM	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Centrifuge Generator Engine	0.20	0.20	5.6×10^{-3}	4.06	3.55	1.32
Tank T4501						2.75
Uncontrolled sources and sumps*						1.64
Controlled sources *	0.13	0.13	6.6	1.8	6.5	17.5
Centrifuge System/TO**	0.16	0.16	1.3	3.3	4.1	9.0
Tank T-29 (Plant 2 WWTS)						1.71
Total	0.49	0.49	7.9	9.16	14.15	33.92
PSD/NANSR Significance Level (T5 Minor Mod Level)	25	15/10	40	40	100	40

*based on requested emissions per March 19, 2013 modification application and related correspondence.
**based on requested emissions per December 28, 2012 modification application and related correspondence.

Based on the update to potential aggregation scenarios no PSD/NANSR issues result from this project.

March 19, 2013 Modification (Gasoline Benzene Reduction Unit Flare)

The purpose of this modification is to revise the emission calculation methodology for emissions from the gasoline benzene reduction (GBR) unit flare and to allow for excess hydrogen (H_2) from the Hydrogen Unit as well as the Plant 1 and Plant 2 reformers to be sent to the GBR flare in lieu of the fuel gas system. Currently the flare only combusts pilot gas or waste gases from the GBR unit and excess H_2 from the Hydrogen Unit as well as the Plant 1 and 2 reformers is sent to the fuel gas system. Sending excess H_2 to the fuel gas system can result in the facility producing more fuel gas than it can use

and cause fuel gas to be combusted in other flares within the refinery.

After submittal of the March 19, 2013 application, Suncor submitted information on April 11, 2013 requesting a lower fuel consumption limit and lower emission limitations for all pollutants but VOC. Emission information shown is based on the April 11, 2013 requested emission and throughput limits for the flare.

Modification Type

The source indicated that this modification would qualify as a minor modification. Colorado Regulation No. 3, Part C, Section X.A identifies those modifications that can be processed under the minor permit modification procedures. Specifically, minor permit modifications "are not otherwise required by the Division to be processed as a significant modification" (Colorado Regulation No. 3, Part C, Section X.A.6). The Division requires that "any change that causes a significant increase in emissions" be processed as a significant modification (Colorado Regulation No. 3, Part C, Section I.A.7.a). According to Part G of Regulation No. 3 (Section I.L, revisions adopted July 15, 1993, Subsection I.G for modifications) the Division considers that a significant increase in emissions is the potential to emit above the major stationary source significant level in Colorado Regulation No. 3, Part D, Section II.A.42.

The increase in permitted emissions from the GBR flare is as follows:

	Emissions (tons/yr)						
	PM	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC	GHG[1]
Requested Emissions	0.31	0.31	0.21	2.9	13.2	25.9	6,231
Current Permitted Emissions	0.1	0.1	0.04	1.0	1.8	0.7	
Emission Increase	0.21	0.21	0.17	1.9	11.4	25.2	6,231
PSD/NANSR Significance Level	25	15/10	40	40	100	40	75,000

[1]GHG emissions shown are as CO_2 equivalent (CO_2e). The permit will not include emission limitations for greenhouse gases (GHG) since the project does not trigger PSD review for GHG. GHG emissions are not shown under "current permitted emissions" since review for GHG emissions was not required at the time the initial construction permit was issued (August 13, 2010).

Although this request to route excess H_2 from the Plant 1 and 2 reformers was submitted more than two years after the permit for the GBR flare was issued, the Division considers that Suncor could have anticipated burning additional waste gases in the GBR unit flare and asked that this project be aggregated with the GBR unit to assess the applicability of major stationary source review requirements. Emissions from the entire GBR project are estimated as follows:

	PM	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Reboiler (H-2410)	1.7	1.7	2.7	9.50	9.0	1.2
GBR project fugitive VOCs[1]						9.31
GBR Flare[2]	0.31	0.31	0.21	2.9	13.2	25.9
Boiler B-4[3]	0.08	0.08	0.35	2.90	0.9	0.06

	PM	$PM_{10}/PM_{2.5}$	SO_2	NO_X	CO	VOC
Boiler B-6[3]	0.08	0.08	0.34	0.41	0.41	0.06
Boiler B-8[3]	0.08	0.08	0.34	0.42	0.42	0.06
Y-3 Cooling Water Tower[3]	0.09	0.09				0.30
Hydrogen Plant[3]	1.62	1.62	1.52	7.83	8.70	1.17
Total	3.96	3.96	5.46	23.96	32.63	38.06
Significance Level	25	15/10	40	40	100	40

[1]Includes information in May 23, 2011 update regarding fugitive VOC emissions.
[2]Requested emissions per April 11, 2013 submittal.
[3]non-modified existing equipment.

The application for the GBR project was received on October 30, 2009 and construction permits were issued on July 22 and August 13, 2010 and construction commenced prior to July 1, 2011. Under the GHG Tailoring rule, the provisions of which were adopted into Colorado Regulation No. 3, if construction permits for a project was issued prior to July 1, 2011 and the project did not trigger PSD review for any criteria pollutants, then the project did not have to be evaluated to see if PSD review was triggered for GHG emissions. Since the Division has indicated that this modification to route excess H_2 from the reformer to the GBR flare should be aggregated and considered part of the project with the initial permitting of the GBR equipment, it raises the question regarding GHG emissions. Since the GBR project was permitted and commenced construction before PSD review was required for GHG emissions it seems reasonable to conclude that a review of the GHG emissions from the entire GBR project to see if PSD review is triggered is not warranted. It should be noted that even though the Division considers that it is not necessary to address GHG emissions from the entire GBR project, GHG emissions from the equipment associated with the entire GBR project are below 75,000 tpy CO2e.

Since the requested increase in permitted emissions is below the significant levels the Division agrees that this modification can be processed as a minor modification.

Modeling Requirements

An impact analysis was submitted as part of the application for the GBR Project in 2009. The impact analysis addressed NO_2 (annual), CO (1-hr and 8-hr), PM_{10} (24-hr), $PM_{2.5}$ (24-hr and annual) and SO_2 (3-hr, 24-hr and annual) and impacts were below the significant impact level. The emissions increase associated with this project are not of the size and magnitude such that they are expected to result in impacts that would cause or contribute to a violation of the standards.

Modeling for the 1-hr NO_2 standard was not required for initial permitting of the GBR unit since the application was received before the standard was in effect. Modeling for the 1-hr SO_2 standard was not required since the GBR permits were issued before the 1-hr SO_2 standard was in effect. Short term emission rates of NO_X and SO_2 are 0.65 lbs/hr and 0.05 lbs/hr, respectively. The short-term emission rate for SO_2 is below the below the modeling threshold of 0.46 lbs/hr in the Division's Colorado Modeling Guideline's May 20, 2011 Updated Tables. Although the short-term NO_X emission rate

exceeds the modeling threshold of 0.46 lb/hr, in accordance with PS Memo 10-01 (see pages 26-27) the Division's Stationary Sources Program has indicated that for minor sources with requested emissions below 40 tons/yr of NO_X and SO_2 that a compliance demonstration is not required for the short-term (hourly) SO_2 and NO_2 national ambient air quality standard (NAAQS).

Discussion

The emission factors used to estimate emissions from the flare are as follows:

Pollutant	Emission Factor	Emission Factor Source
PM/ PM_{10}/ $PM_{2.5}$	7.45 x 10^{-3} lb/MMBtu	AP-42, Section 1.4 (dated 7/98), Table 1.4-2, converted to lb/MMBtu based on a heat input of 1020 Btu/scf per footnote a.
VOC	0.6185 lb/MMBtu	Calculated per average expected gas composition and heat content. Emission factor assumes 95% control efficiency for flare.
SO_2	0.005 lb/MMBtu	Based on engineering estimates[1].
NO_X	0.068 lb/MMBtu	AP-42, Section 13.5 (dated 9/91), Table 13.5-1. CO emission factor adjusted for quantity of gas that is presumed to be H_2.
CO	0.3159 lb/MMBtu	

[1]Gases vented to this flare are from process units that are intolerant of sulfur.

In the initial application, Suncor requested that emissions from the flare be based on 98% control efficiency. The Division typically does not allow for the use of control efficiencies above 95% for open flares. The Division has taken this position in the last several years since it is difficult to test flares to verify the control efficiency. In this case, the Division indicated that we would allow the use of 98% control efficiency if additional parameters, such as the ratio to steam to vent gas or the Btu content of the vent gas plus steam. In lieu of monitoring additional parameters, Suncor opted to rely on a 95% control efficiency for the flare and submitted revised calculations on April 11, 2013 indicating a lower requested heat input and emission limitations for all pollutants except VOC. At the requested throughput rate, PM, PM_{10}, $PM_{2.5}$ and SO_2 emissions are below the APEN de minimis level, therefore, emission limitations for these pollutants will not be included in the permit.

Note that Suncor indicated that in the future, they may explore the 98% control efficiency based on manufacturer's recommendations for the ratio of steam to vent gas in order to ensure a 98% control efficiency.

Update of Potential Aggregation Issues

During processing of the October 1, 2012 renewal permit, modifications were made to other portions of the facility and any potential aggregation issues were discussed in the October 2012 renewal TRD. Since changes to the permitted emissions for the GBR flare are being made with this modification, the Division is reviewing the potential aggregation issues addressed in the October 2012 renewal TRD to ensure that PSD

NANSR requirements are not triggered. Potential aggregation issues with respect to process units were discussed on pages 50 – 55 of the October 2012 renewal TRD.

In the October 2012 renewal TRD the Division noted that the GBR project was necessary in order to comply with the Mobile Source Air Toxics Rule and as such was likely an independent project. While the Division was not convinced that the project to make improvements to the Plant 1 catalytic reforming unit (Plant 1 reformer) were necessary for the GBR project, the Division assessed emissions from the Plant 1 reformer project with the GBR project and concluded that PSD/NANSR requirements were not triggered if these projects were aggregated. Suncor submitted information on March 19, 2013 indicating that none of the projects addressed during processing of the October 2012 renewal permit warranted aggregation since they were independent (each of the projects could operate individually from each other and each project could be completed without affecting or being affected by other projects) and that none of the projects would suffer a reduced benefit if another project was not completed.

In the October 2012 TRD, while the Division was not convinced that modifications to the Plant 1 reformer were necessary for the GBR project to proceed, due to the timing of the applications and the potential for dependence (reformate from the Plant 1 reformer is a feed to the GBR unit) the Division assessed emission from both projects to see if PSD/NANSR requirements were triggered. It has generally been acknowledged that timing alone is not a determining factor in considering whether two separate projects should be aggregated but that projects related to the same process or unit should be scrutinized. The Division did review the GBR unit project and Plant 1 reformer improvement project due to the close timing of application submittal even though the projects may not be dependent. In an email received on April 5, 2013 Suncor indicated that the upgrades to the Plant 1 reformer were not necessary for proper operation of the GBR unit and that had the upgrades to the Plant 1 reformer not been made, the GBR unit would still function appropriately. Therefore, the Division considers that aggregating the GBR project with the Plant 1 reformer improvement project is not warranted and the analysis conducted in the October 2012 renewal TRD has not been updated.

III. Discussion of Modifications Made

Source Requested Modifications

The Division addressed the source's requested modifications as follows:

December 28, 2012 Modification (Tanks T96/T97)

Section II.3

- Revised the emission limit in Condition 3.1 for Tanks T96/T97 to 6.72 tons/yr of VOC.

- Revised the throughput description in Condition 3.10 for Tanks T96/T97 to allow an RVP of 15 psia.

December 28, 2012 Modification (Centrifuge System TO)

Suncor submitted draft permit language with the application but the Division determined that changes to Suncor's proposed language were necessary to properly address the changes to the centrifuge system. The primary areas in which the Division made revisions to the Suncor's proposed language is as follows:

- In their draft permit, Suncor indicated that emissions from the centrifuge system would be estimated annually. However, the Division will require that emission calculations for the centrifuge system be conducted on a monthly basis and used in a rolling twelve month total to assess compliance with the annual limitations.

- Suncor did not include any revisions to the language in Section II, Condition 66 to address the TO for the centrifuge. The Division will make appropriate changes Section II, Condition 66 to address the TO.

In their draft permit language Suncor removed all references and requirements for the engines that are currently controlling the centrifuge. Suncor indicated in the application that the TO will not be considered to be operating successfully until the TO has combusted vapors from the centrifuge for 30 days, therefore the Division considered leaving the requirements for the engines in the permit. However, during a January 23, 2013 telephone conversation, Suncor indicated that the TO is considered to be operating successfully and that the engines have been removed from the site. Therefore, all language regarding the engines has been removed from the permit.

The following changes will be made to the permit to address the changes to the centrifuge system control device:

<u>Section I – General Activities and Summary</u>

- Revised the table in Condition 5.1 to include the new AIRs ID no. for the centrifuge and to address the new control technology.

<u>Section II.23 - Plant 1 WWTS</u>

- Condition 23.1 was revised to change the VOC emission limit for the Plant 1 WWTS and to include emission limitations for the API Centrifuge System.

- Revised Condition 23.10 to include the thermal oxidizer and the carbon canisters.

- Added a requirement to Condition 23.10 to require that the temperature for the thermal oxidizer remain at or above the level measured during the performance test. Compliance with this requirement will be monitored using the device required by BWON and consistent with the averaging time specified in the BWON.

- A new Condition 23.13 was added in order to track hours of operation for the Centrifuge System. Hours of operation are necessary to calculate emissions.

Section II.66 – BWON Requirements

- Revised Condition 66.16.2 to include specific requirements for the thermal oxidizer and carbon canisters.

- Removed Condition 66.19 since it applies to flares and no flares are used to comply with the BWON requirements.

- Added Condition 66.28.1 to identify the monitoring requirements for the thermal oxidizer.

- Revised Conditions 66.43 and 66.46 to add additional language to address recordkeeping requirements specific for the carbon canisters and TO.

- Removed Condition 66.48 since the source is not complying the provisions in 61.352 (alternative standards for oil-water separators).

- Included the reporting requirements in 61.357(f) since the requirements apply.

Appendices B and C

- The centrifuge system was included separately in the tables.

March 19, 2013 Modification (Plant 1 WWTS RTO)

Suncor submitted draft permit language with the application but the Division determined that changes to Suncor's proposed language were necessary to properly address the fact that the RTO will eventually replace carbon canisters as the control device for many pieces of equipment in the Plant 1 WWTS. The primary areas in which the Division made revisions to the Suncor's proposed language is as follows:

- The Division considered that emissions from the Plant 1 WWTS should be addressed on four APENs and thus should have four emission limitations. APENs would be as follows: controlled sources (sources that will all eventually be controlled by the RTO), uncontrolled sources and sumps (remaining sources addressed in the 2/27/12 WATER 9 analysis and the sumps), the centrifuge system TO (can be cancelled is the centrifuge system is controlled by the RTO) and T4501.

- Added a separate condition to address the RTO and address the requirements that will apply when the RTO controls additional streams under the WWTS.

- The language in Condition 23.11 (API headworks compliance order requirements) was revised to remove language for requirements that have been completed.

The following changes will be made to the permit to address the changes to the centrifuge system control device:

Section I – General Activities and Summary

- Revised the table in Condition 5.1 to address the breakdown of the Plant 1 WWTS to uncontrolled sources and sumps and controlled sources, to include the new AIRs ID no. for the uncontrolled sources and sumps and to address the new control technology.

Section II.23 – Plant 1 WWTS

- Added separate emission limitations for the uncontrolled sources and sumps and controlled sources in Condition 23.1. Emissions will be calculated monthly and used in rolling twelve month totals to monitor compliance with the limitations.

- Added requirements for the RTO in Condition 23.12.

Section II.66 – BWON Requirements

- Condition 66.2 was replaced with the requirements in 61.342(e). The provisions in Condition 66.2 were essentially the same as in Condition 66.1 although Condition 66.1 includes the specific language in 61.342(b).

- The provisions in 61.346(a) were included as these requirements apply to the API Headworks when the RTO starts up. A note was added indicating that the alternative in 61.346(b) is no longer applicable to the API Headworks when the RTO starts up.

Appendices B and C

- The Plant 1 WWTS was divided into two separate sources – uncontrolled sources and sumps and controlled sources in the tables.

March 19, 2013 Modification (GBR Flare)

In general, the Division made the changes as indicated in the draft permit submitted with the application, with the following exceptions:

- There is no language in the permit for monitoring compliance with the flare vent gas heat input requirements in § 60.18 (Condition 58). So a condition was added to require that the Btu content of the flared gas be analyzed weekly to make sure it complies with the Btu content requirements in § 60.18.

- Language was added to the throughput limit to clarify that other than the flare pilot and purge gases, only gases from the GBR unit , Hydrogen unit and excess H_2 from the Plants 1 and 2 reformers can be combusted in the flare. This

language was added because the permit language relies on fuel gases that are inherently low in sulfur as noted in 60.107a(a)(3).

The following changes will be made to the permit to address the changes to the GBR Flare:

Section II.31 – GBR Flare

- The emission limitations and emission factors in Condition 31.1 were revised as requested.

- The throughput limit in Condition 31.6 was revised as requested. In addition, the Division added language to Condition 31.6 limiting the flare gases to either flare pilot or purge gas, gases from the GBR unit, Hydrogen unit or excess H_2 from the Plants 1 and 2 reformers and more specifically indicating how monthly throughput would be determined.

- Condition 31.8 was revised to include a requirement to verify the net heating value of the flare gas since Condition 58 does not include any specific monitoring for the heat content requirement. In addition, language was added to note the daily visible emission observations required by Condition 58.9.

Other Modifications

In addition to the requested modifications made by the source, the Division used this opportunity to include changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this modification.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments on other permits, to the Suncor - Plants 1 and 3 Operating Permit with the source's requested modifications. These changes are as follows:

Section I - General Activities and Summary

- Included manufacturer, model and serial no. information in the Table in Condition 5.1 for H-2410 (GBR reboiler) and F3 (GBR flare).

Section II.8 – Diesel-fired Engines

- Corrected the NSPS IIII limits for the centrifuge generator engine in Condition 8.8.1.

- Revisions to both 40 CFR Part 63 Subpart ZZZZ and 40 CFR Part 60 Subpart IIII were published in the Federal Register on January 30, 2013 and these revisions

have been incorporated into Conditions 8.1 and 8.8 of the permit. These revisions do not change any emission limitations or monitoring requirements and are generally insignificant in nature, so the Division considers that these revisions can be included with this minor modification.

Note that changes to Subpart ZZZZ include requirements related to operating emergency engines for demand response. Although the conditions related to demand response would not apply to the emergency engines addressed in this Section II.8 (emergency fire pump engines), the demand response requirements have been included in the event that emergency generators may be addressed in this permit in the future.

Section II.11 – Process Heaters without Annual Emission Limitations

The Division made an error in the October 1, 2012 renewal permit with respect to the applicability of the Boiler MACT (40 CFR Part 63 Subpart DDDDD) to the FCCU heater (H-22). The Division included the March 20, 2011 Boiler MACT requirements into the October 1, 2012 renewal permit but failed to consider the exemption in 63.7491(h) that states that any boiler or process heater that is part of the affected source subject to another subpart under Part 63 is not subject to the Boiler MACT requirements. Therefore, since H-22 is part of the FCCU, which is subject to requirements under 40 CFR Part 63 Subpart UUU. The Division considers that this exemption applies even though the FCCU heater itself is not subject to any requirements under Subpart UUU. In order to address this oversight the following change was made:

- A note was added to Condition 11.7 indicating that H-22 (FCCU heater) is not subject to the Boiler MACT requirements.

Section II.16 – Process H-28, H-29 and H-30

As discussed above under Section II.11, the heaters for the catalytic reforming unit (H-28, H-29 and H-30) are exempt from the Boiler MACT requirements since the catalytic reforming unit is subject to requirements under 40 CFR Part 63 Subpart UUU and the Division overlooked this in the October 1, 2012 renewal permit. The Division considers that this exemption applies even though the catalytic reforming unit heaters themselves are not subject to any requirements under Subpart UUU. In order to address this oversight Condition 16.8 was removed.

Section II.21 – Process Heaters H-1716 and H-1717

NSPS Ja requirements

At the time the October 1, 2012 renewal permit was processed, the provisions in NSPS Ja for fuel gas combustion devices and flares had been stayed indefinitely. Since the stay has been lifted the NSPS Ja requirements were included in the permit for these heaters. For fuel gas combustion devices, the source has the option to comply with an SO_2 emission limit or fuel gas concentration limit on H_2S. Since the source will comply with the fuel gas concentration limit only that requirement and the testing and monitoring

requirements for that limitation will be included in the permit.

Suncor indicated that the heat rating for these heaters is based on HHV and so only H-1716 is subject to NO_X requirements (H-1717 has a heat input rate less than 40 MMBtu/hr). Suncor has indicated that H-1716 is a natural draft heater and that they will comply with the NO_X ppm limit. As a result only the requirements related to this limit and compliance options Suncor for this limit have been included in the permit.

The NSPS Ja requirements have been included in Condition 21.3 and Condition 21.8 has been revised to indicate that it only addresses the NSPS General Provisions.

Miscellaneous

- Since NSPS Ja includes limits on the H_2S content of sulfur in the fuel gas that is equivalent to the fuel gas H_2S limit that was included in the construction permit (included in Condition 21.3 of the T5 permit), the fuel gas sulfur limit from the construction permit has been streamlined and is included in the table in Section III.3.

<u>Section II.28 – Process Heaters H-2410</u>

NSPS Ja requirements

At the time the October 1, 2012 renewal permit was processed, the provisions in NSPS Ja for fuel gas combustion devices and flares had been stayed indefinitely. Since the stay has been lifted the NSPS Ja requirements were included in the permit for this heater. For fuel gas combustion devices, the source has the option to comply with an SO_2 emission limit or fuel gas concentration limit on H_2S. Since the source will comply with the fuel gas concentration limit only that requirement and the testing and monitoring requirements for that limitation will be included in the permit.

Suncor has indicated that this unit is a natural draft heater and that they will comply with the NO_X ppm limit. As a result only the requirements related to this limit and compliance options for this limit have been included in the permit.

The NSPS Ja requirements have been included in Condition 28.3 and Condition 28.9 has been revised to indicate that it only addresses the NSPS General Provisions.

Miscellaneous

- Since NSPS Ja includes limits on the H_2S content of sulfur in the fuel gas that is equivalent to the fuel gas H_2S limit that was included in the construction permit (included in Condition 28.3 of the T5 permit), the fuel gas sulfur limit from the construction permit has been streamlined and is included in the table in Section III.3.

- Removed Conditions 28.11(startup notice) and 28.12 (compliance certification) since these requirements have been completed.

Section II.31 – GBR Flare

NSPS Ja

At the time the October 1, 2012 renewal permit was processed, the provisions in NSPS Ja for fuel gas combustion devices and flares had been stayed indefinitely. Since the stay has been lifted the NSPS Ja requirements have been included in the permit for the flare.

The NSPS Ja requirements have been included in Condition 31.2 and Condition 31.7 has been revised to indicate that it only addresses the NSPS General Provisions.

Miscellaneous

- In the summary table with respect to Condition 31.1, the frequency for calculating emissions is specified as monthly and the text portion of Condition 31.1 indicates monthly but the equations indicate yearly calculations. For sources with emission limitations, the Division typically requires that emissions be calculated monthly and used in a rolling twelve month total to monitor compliance with the emission limitations. It appears that the Division erred in not including the requirement to maintain rolling twelve month totals with respect to both the emission limitations and the throughput limitation (Condition 31.6), therefore, the Division is using this opportunity to correct these errors.

- Since NSPS Ja includes limits on the H_2S content of sulfur in the fuel gas that is equivalent to the fuel gas H_2S limit that was included in the construction permit (included in Condition 31.2 of the T5 permit), the fuel gas sulfur limit from the construction permit has been streamlined and is included in the table in Section III.3.

- The annual SO_2 emission limitation was removed from the permit, since the limit was less than the APEN de minimis level. Since the flare is subject to sulfur requirements in NSPS Ja and the flare combusts fuel gas that is considered inherently low in sulfur, the annual SO_2 emission limit is no longer necessary.

- Removed Conditions 31.10 (startup notice) and 31.11 (compliance certification) since these requirements have been completed.

Section II.41 – Reg 7 (RACT) Requirements for Petroleum Liquid Storage Tanks

- Requirements in Reg 7, Section VI.B.3 were included in Condition 41.7. These requirements apply to some of the Plant 1 WWTS tanks but was inadvertently not included in the permit.

Section II.46 – NSPS Ja Requirements (40 CFR Part 60 Subpart Ja)

The current permit includes a placeholder for the NSPS Ja requirements, since the requirements applicable to fuel gas combustions devices and flares had been stayed.

The permit indicates that the NSPS Ja requirements will be included when EPA reaches a final decision on all of the issues for which reconsideration was granted. EPA reached a decision on the issues, lifted the stay and promulgated final revisions to NSPS Ja on September 12, 2012 and so these requirements have been included in the permit. The current permit (renewal, issued October 1, 2012) lists the equipment subject to NSPS Ja and cites the provisions in NSPS Ja, although the specific requirements in NSPS Ja were not included in the permit. For that reason this change would not be considered a significant change to existing monitoring and thus can be processed as a minor modification.

Section II.64 – Boiler MACT Requirements (40 CFR Part 63 Subpart DDDDD)

Final revisions to the Boiler MACT were published in the Federal Register on January 31, 2013 and these revisions have been incorporated into this permit. These revisions do not change any emission limitations, nor do they change the frequency of conducting work practice requirements for any of the equipment identified in Section II of this permit, so the Division considers that these revisions can be included with this minor modification.

Although there are no boilers and/or process heaters less than or equal to 5 MMBtu/hr included in Section II of this permit, the Division has included the requirements for such units in the event that such units may be addressed in this permit in the future.

In addition, the Division removed the Boiler MACT requirements related to switching from gas 1 fuels to others fuels since this is unlikely to occur. Under the Consent Decree, Suncor is prohibited from burning liquid fuels in their boilers and process heaters (Section II, Condition 19.5) and it is unlikely that gases other than natural gas or refinery gas would be used in these units.

Also, the Division consolidated the requirements in Conditions 64.24 through 64.26 (63.7560 - form and length of retention for records) by just referencing that section.

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
Stationary Sources Program / Air Pollution Control Division

INTER-OFFICE COMMUNICATION

PS Memo 10-01

TO: Stationary Sources Staff, Local Agencies, Regulated Community

FROM: Kirsten King and Roland C. Hea

DATE: September 20, 2010

RE: Permit Modeling Requirements for the 1-Hour NO_2 and SO_2 NAAQS

The Division is establishing this guidance for use by minor stationary sources of nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) in evaluating whether modeling is necessary for permitting purposes to determine whether a permit applicant's emissions will comply with the new 1-hour NO_2 and/or the new 1-hour SO_2 National Ambient Air Quality Standard (NAAQS). The United States Environmental Protection Agency (EPA) published implementation guidance on June 28, 2010 and August 23, 2010 regarding demonstrating compliance with the new standards for Prevention of Significant Deterioration (PSD) sources.[1] The Division finds it useful to publish this supplemental state guidance to ensure that minor sources are addressed in a manner consistent with the EPA guidance for PSD sources.

Under federal rules, an ambient air quality impact analysis is required for each pollutant that a PSD source has the potential to emit in significant amounts. Such analysis includes modeling. The metric used by EPA to measure significant amounts is the significant emissions rate (SER). Federal rules currently define the SER for NO_X and SO_2 as 40 tons per year (tpy). (40 CFR 52.21(b)(23)(i); 40 CFR 51.166(b)(23)(i)). EPA recently evaluated and decided to apply on an interim basis the 40 tpy SER to major source permitting compliance demonstrations for the hourly NO_2 and SO_2 standards. EPA concludes and states that an ambient air quality impact analysis is not necessary for PSD sources with projected NO_2 or SO_2 emissions rates below the SER. (Wood Memoranda at p.11 and p.4)

[1] See June 28, 2010, Anna Marie Wood, Acting Director, Air Quality Policy Division, Office of Air Quality Planning and Standards Memorandum "General Guidance for Implementing the 1-hour NO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour NO_2 Significant Impact Level" and August 23, 2010 Memorandum "General Guidance for Implementing the 1-hour SO_2 National Ambient Air Quality Standard in Prevention of Significant Deterioration Permits, Including an Interim 1-hour SO_2 Significant Impact Level" ("Wood Memoranda").

The Division has evaluated EPA's rationale for establishing NO_2 and SO_2 SERs for modeling the 1-hour NO_2 and SO_2 standards. The Wood Memoranda guidance set forth EPA's reasoning that its SER for SO_2 (a pollutant with shorter-term 3-hour and 24-hour averaging times) is 40 tpy, and, for this pollutant, ambient air quality impact analyses have not been necessary at levels below the SER. EPA has concluded that this reasoning applies to the one-hour NO_2 and SO_2 standards on an interim basis. EPA states it intends to conduct an evaluation of screening tools available to permitting agencies. In the interim, it recommends the continued use of the existing SER for NO_x and SO_2 emissions with respect to the 1-hour NO_2 and SO_2 standards, and thus ambient air quality impact analyses are not necessary for either NO_2 or SO_2 emissions below the 40 tpy SER.

EPA's Wood Memoranda guidance address PSD sources. The Division believes that the same principles apply to minor sources, in part, to ensure consistency of treatment in permitting and to ensure that it is not imposing different requirements on minor sources than those to which PSD sources are subject. The Division is aware of no factual basis to impose more stringent requirements on minor sources than EPA would impose on the largest air pollution sources. Therefore, the Division will apply EPA's SERs for NO_X and SO_2 to the 1-hour NO_2 and 1-hour SO_2 standards for all stationary source permitting activities, including determining when ambient air quality impact analyses are necessary for permitting, pending the consideration of any further guidance issued by EPA on this subject.